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ABSTRACT

In a study of mothers' assessment of their infant's temperament during the first 3 months, a total of 116 mothers completed 23 scaled items assessing the 9 New York Longitudinal Study temperament dimensions, and cuddliness and soothability, at 1 week, 1 month, and 3 months after delivery. Although nearly half of the mothers could not rate approach and adaptability at 1 week, most could rate all temperament dimensions at 1 and 3 months. Only cuddliness, approach, adaptability, and persistence did not change significantly. Six dimensions were related to at least two other dimensions at all times. Intracorrelation of all dimensions was significant for adjacent assessments. Mothers may assess infant temperament dimensions in terms of their own goal-directed activity. Variability in temperament dimensions over time indicates change either in the meaning of some items to mothers or in the infant's behavioral style as the infant grows older. (RH)

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Maternal Assessment of the Temperament of Very Young Infants

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Abstract

To explore mothers' assessment of their infant's temperament across the first three months, 116 mothers completed 23 scaled items assessing the nine New York Longitudinal Study temperament dimensions plus cuddliness and soothability 1 week, 1 month, and 3 months after delivery. Although nearly half could not rate approach and adaptability at 1 week, most mothers could rate all temperament dimensions at 1 and 3 months. Only cuddliness, approach, adaptability and persistence did not change significantly over time. Six of the dimensions were related to at least two other dimensions at all times. Intra-correlation of all dimensions were significant for adjacent assessments. Mothers may assess infant temperament dimensions in terms of their own goal-directed activity. Variability in temperament dimensions across time indicates change either in the meaning of some items to mothers or in the infant's behavioral style as the infant grows older.

Maternal Assessment of the Temperament of Very Young Infants

The idea that a mother's perception of her very young infant's temperament may change as the infant's biological patterns become more homeostatic during the first quarter year is intuitively sound, but little systematic study of mothers' descriptions of their very young infant's temperament has been made. Worobey (1986) claimed that temperament characteristics, if present at birth, should be expressed in the infant's earliest interactions with the environment. Although mothers' descriptions of infant temperament have recently been examined for change or continuity during the first 3 months (Worobey & Blajda, 1989), they have not been examined with instruments designed specifically for assessment of infant temperament during the first quarter year. Serial assessments of maternal perception of temperament during this time would facilitate delineation of a pattern of change or continuity in characteristics of behavior style as the infant grows, develops, and encounters new situations.

The purpose of the present study was to explore mothers' characterizations of their infant's temperament at 1 week and at 1 and 3 months after birth. Although at 1 week, mothers have had relatively little infant-care experience, the experience is intense. Using 48 mothers' responses to the New York Longitudinal Study Clinical Interview, adapted for infants 1 month and younger, Worobey was able to score all nine New York Longitudinal Study (NYLS) dimensions for these infants. By 3 months, the bio-behavioral level of development characterized by increasing and clearly

defined cycles of wakefulness is generally well established and a new period of development begins (Emde, Gaensbauer, & Harmon, 1976).

Following Worobey's recommendation that test items consistent with these dimensions be developed for very young infants and tested at multiple points over the first 3 months, a questionnaire that assessed parental perception of the nine NYLS dimensions during the first 3 months was derived from the guidelines for the NYLS Clinical Interview (Thomas, Chess, & Birch, 1968; Thomas & Chess, 1977) and administered in this study. In addition to the nine NYLS dimensions, two other temperament dimensions pertinent to young infants--cuddliness, the degree to which infants make postural adjustments or mold to the person holding them (Korner, 1971; Schaffer & Emerson, 1964), and soothability, referring to cessation of crying with assistance (Birns, Barten, & Bridger, 1969; Korner, 1971), were added. Differences between the descriptions of primiparae and multiparae were examined to learn whether maternal experience had an influence on perceptions of infant temperament. Since NYLS dimensions are not necessarily independent of each other (Huitt & Ashton, 1982; Lerner, Palermo, Spiro, & Nesselroade, 1982), inter-relationships of dimensions were examined to describe the infants at each assessment.

Sample

Mothers aged 17 years or older who had delivered healthy infants at term volunteered for the study prior to discharge from the hospital. Of the 116 mothers who completed all three assessments of infant temperament for this study, 60 (51.7%) were primiparae. Mothers were on the average 27.8 years of

age (SD = 4.4) and relatively well educated (M = 14.9 years of schooling, SD = 2.8). Approximately equal numbers of the infants were male and female.

Data Collection Instrument, What My Baby Is Like (WBL)

The WBL included 23 items to assess soothability (including ease of maternal comforting and extent of self-comforting) and cuddliness (snuggling in to the parent's body when held) as well as the nine NYLS temperament dimensions: positive mood--what the infant's mood is like most of the time; rhythmicity--regularity in feeding and in sleeping; threshold of responsiveness--sensitivity to sounds and environmental events when awake and when sleeping; activity level--how active physically the infant is while feeding, being bathed, being diapered, and during sleep; approach/withdrawal--acceptance or withdrawal from new things; adaptability--how long it takes infant to get used to changes in feeding arrangements, sleeping arrangements, and to change in general; intensity of response--loudness or intensity of expressing self and communicating feelings; distractibility--how easily infant can be distracted from crying, from an activity in general, and continuation or cessation of sucking with a potentially distracting event; and attention span/persistence (treated as persistence for this study)--keeping to a feeding activity and to activity in general and duration of looking at something.

To assess the NYLS dimensions, the items Barnard and Eyres (1979) generated from the Thomas and Chess (1977) clinical interview protocol were adapted and extended with items generated from the entries concerning infant temperament in the daily log kept by 62 mothers during the infant's first 90 days (Pridham, Hansen, Bradley, & Heighway, 1982).

Unless a context likely to be meaningful to all or most parents of very young infants could be identified, items requested a global assessment (e.g., What is your baby's mood like most of the time?). The 14 context-specific items are exemplified by the item for rhythmicity: How regular in feeding is your baby? (Can you count on your baby following the same feeding schedule every day?)

A nine-point graphic rating scale with bi-polar descriptors at the two ends of the scale was used for each item. Unless the term for a temperament dimension had a common, generally understood meaning (e.g., mood, distraction), items were written without using the specific term for the temperament dimension. For example, the item for threshold of responsiveness asks the mother to respond to these questions: When awake, how sensitive is your baby to sounds or things going on around him/her? Think about how loud a sound or change in activity it takes before your baby responds. Because no inherent desirability in the direction of items was assumed, four randomly chosen items were scaled with the least intensity at the highest end of the scale. These items were recorded so that the greater the magnitude of the temperament dimension (e.g., the greater the sensitivity of the infant to stimuli or the lower the threshold of responsiveness), the higher the score.

Positive mood, approach, intensity of response, and cuddliness were each assessed with one global item. All other temperament dimensions were assessed with at least two context-specific items. A mean score was obtained for each of the seven multiple-item dimensions (soothability--2 items, rhythmicity--2 items, threshold--2 items, activity level--4 items, adaptability--3 items, distractibility--3 items, and persistence--3 items).

Results

Although about 46% of the mothers could not rate the adaptability items at 1 week, 84% of the mothers could rate this temperament dimension at 1 month and 92% could rate it at 3 months. At 1 week, approximately 78% of the mothers rated the approach dimension. Mothers who were unable to rate these two dimensions indicated that at 1 week their infant had not experienced new things or had not had to get used to a change. All other items for each of the three assessments were rated by at least 95% of the mothers.

On the average, infants were consistently rated above the midpoint of the scale (4.0) on soothability, cuddliness, positive mood, activity level, adaptability, approach, intensity of response, and persistence (see Table 1). Although scores for rhythmicity, threshold, and distractibility were lower than the mean at 1 week and at 1 month, they were higher at 3 months. The highest scores were for cuddliness.

Place Table 1 about here

The change in maternal perception of temperament dimensions across time was significant for soothability, positive mood, rhythmicity, threshold, activity level, intensity, and distractibility (see Table 2). Scores for soothability and positive mood were lower at 1 month than at 1 week and 3 months. For these two temperament dimensions, the change in magnitude over time is not linear. Scores for rhythmicity, threshold, activity level, intensity, and distractibility steadily increased. Cuddliness, adaptability,

approach, and persistence remained relatively constant in magnitude across the three assessments.

Place Table 2 about here

Maternal parity difference in assessment was found only for activity level. At both 1 week and 1 month, primiparae rated their infant significantly higher than multiparae on this dimension [$t(111) = 2.22$, $p = .03$, two tail, at 1 week; $t(112) = 2.12$, $p = .04$, at 1 month]. They rated female infants higher on persistence than male infants at 1 month [$t(107) = 2.03$, $p = .04$, two tail].

Pearson coefficients for the inter-correlation among temperament dimensions at each of the three infant ages are shown in Tables 3-5. Within each administration of the WBL and with p of at least .05, soothability was consistently related to positive mood, rhythmicity, adaptability, and approach; cuddliness to positive mood; positive mood to rhythmicity and persistence; rhythmicity to approach; and approach to adaptability. At both 1 and 3 months, rhythmicity was also related to cuddliness and adaptability. Soothability, cuddliness, positive mood, rhythmicity, approach, and persistence were related to at least two other dimensions for all three administrations. Adaptability was related to at least two other dimensions for at least two of the three assessments. Activity level and threshold consistently had very small coefficients for correlation with other dimensions.

Place Tables 3-5 about here

Pearson coefficients for the intra-correlation of a dimension across assessments are shown in Table 6. Except for the approach dimension, all coefficients were significant ($p < .05$) for adjacent assessments (1 week with 1 month and 1 month with 3 months) and for 1 week with 3 months as well. The intra-correlations were most robust (at least .50) for positive mood, activity level, and persistence. Coefficients for several dimensions, including soothability, cuddliness, adaptability, and approach, were consistently less than .40, indicating that factors other than stability of maternal assessment accounted for most of the variance.

Place Table 6 about here

Discussion

Worobey (1986) claimed that the behavior of infants changes considerably in the first few months after their birth. However, until this study, change and stability in NYLS temperament dimensions within the first 3 months have not been described using maternal assessment. The direction of changes in mean scores are consistent with the findings of Worobey and Blajda (1989), who used Rothbert's Infant Behavior Questionnaire for infants at 2 weeks, 2 months, and 12 months for comparable dimensions, including activity level, smiling/laughter (comparable to positive mood), soothability, and duration of orienting (comparable to persistence).

The finding of lowest scores for soothability and for positive mood at 1 month may be explained by the broader range of infant behavior experienced by a mother at 1 month in contrast to 1 week, giving the mother different bases for assessment. By 3 months, infants are likely to be more settled in their bio-behavioral patterns and thus perceived by their mothers as more soothable and positive in mood than they were at 1 month.

Change in the magnitude of the temperament dimensions was consistent with expected developmental change. The increase with time in threshold of responsiveness, activity level, intensity of reaction, and distractibility indicates increasing awareness of and responsiveness to environmental stimuli, and the increase in soothability, positive mood, and rhythmicity suggests increased organization of the infant's behavior. Dimensions expressing behavior style in interpersonal or "task" settings (i.e., cuddliness, adaptability, approach, and persistence) did not change significantly. These consistencies suggested: (a) infants may have an underlying style in relation to the interpersonal or goal-directed activities that mothers or other family members present to them; or (b) mothers may have made their assessment of temperament dimensions more easily in terms of interpersonal or goal-directed activity than in terms of infant behavior not clearly oriented to a maternal goal.

The higher rating of activity level given infants by primiparous mothers at 1 week and at 1 month may reflect their relative inexperience with very young infants. The lack of significant difference between primiparae and multiparae in mean ratings for other temperament dimensions and for activity level at 3 months may indicate that, on the whole, both groups of mothers

based their ratings on a sense of the range of characteristics of the world of infants they had experienced.

The low to moderate size of the intra-correlation coefficients indicates that considerable variation in temperament dimensions as perceived by mothers remains to be explained. Perhaps the WBL items elicited a different meaning for mothers as the infant grew older. Study of the bases of maternal assessment of infant temperament dimensions would help to clarify this hypothesis.

The WBL's content validity is supported by items derived from the NYLS clinical interview and daily logs kept by mothers in their infant's first 90 days. However, the global items, lacking referents in specific contexts, may have been one source of variation from one assessment to another. The limited repertoire of behaviors and settings in which behavior occurs for very young infants makes the generation of a variety of context-specific items for any one dimension very difficult. The extent to which mothers projected onto their infants a behavior style for such temperament dimensions as approach and distractibility at the earliest assessments is potentially another source of variation due to the instrument. However, consistencies across assessments in the pattern of correlation of these temperament dimensions with others as the infants grew older and more capable of a clearly interpretable response suggests a regular, non-random basis for the assessment.

This study contributed a description of mothers' perception of infant temperament across the infant's first 3 months in terms of the nine NYLS dimensions and two other dimensions pertinent to young infants, soothability and cuddliness. The significant inter-correlations among some temperament

dimensions for all time periods indicates that dimensions are not entirely independent of each other. Examination of the association of temperament dimensions with variables related to infant-care tasks, including mothers' sense of competence in problem-solving infant-care issues and with their evaluation of their parenting, is a next step in clarifying how mothers' assessment of infant temperament is organized.

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Table 1. Means and standard deviations for temperament dimensions at 1 week and 1 and 3 months

Temperament Dimension	Age of Infant								
	1 Week			1 Month			3 Months		
	n	M	SD	n	M	SD	n	M	SD
1. Soothability	116	5.40	1.37	116	4.57	1.42	116	5.53	1.22
2. Cuddliness	116	6.58	1.64	116	6.45	1.66	116	6.39	1.76
3. Positive Mood	116	5.79	1.99	116	5.37	1.90	116	5.72	2.30
4. Rhythmicity	115	3.77	1.83	115	3.93	1.90	113	4.53	1.68
5. Threshold of responsiveness	114	3.71	1.43	115	3.91	1.41	113	4.42	1.13
6. Activity Level	113	4.15	1.11	114	4.20	1.22	113	4.44	1.25
7. Adaptability	71	5.72	1.57	106	5.60	1.56	111	5.79	1.29
8. Approach	91	6.08	1.16	110	6.04	1.26	112	6.36	1.26
9. Intensity	111	4.40	1.90	114	5.53	1.81	113	5.63	1.72
10. Distractibility	114	3.85	.98	114	3.87	1.15	113	4.65	.97
11. Persistence	110	4.85	1.26	112	4.81	1.41	113	4.92	1.41

Note. Scale: 0 = low magnitude of the temperament dimension; 8 =high magnitude.

Table 2. The change of each temperament dimension over time (3 assessments) from multivariate repeated measures analysis (Wilks Test)

Temperament Dimension	Exact F	Error DF	p
1. Soothability	25.14	98	.000
2. Cuddliness	.66	98	.52
3. Positive Mood	6.90	98	.002
4. Rhythmicity	6.23	94	.003
5. Threshold	11.02	93	.000
6. Activity Level	4.34	92	.02
7. Adaptability	2.79	72	.07
8. Approach	.68	49	.51
9. Intensity	24.33	90	.000
10. Distractibility	27.83	90	.000
11. Persistence	1.48	88	.23

Note. Degrees of freedom for time = 2.

Table 3. Inter-correlation (Pearson r) among temperament dimensions at 1 week

Dimension	1	2	3	4	5	6	7	8	9	10
1. Soothability										
2. Cuddliness	.14									
3. Positive Mood	.36***	.27**								
4. Rhythmicity	.40***	.10	.31**							
5. Threshold	-.04	.04	.003	.09						
6. Activity Level	.04	-.17*	.008	-.04	.13					
7. Adaptability	.37***	.06	.15	.09	-.08	.10				
8. Approach	.20*	-.03	.03	.18*	.08	-.13	.32**			
9. Intensity	-.30**	-.01	-.14	-.07	.13	.15	-.03	.04		
10. Distractibility	.13	.05	-.26**	.01	.03	-.02	.13	.05	.03	
11. Persistence	.05	.06	.21*	.19*	.003	-.15	-.14	.14	-.10	-.12

*$p \leq .05$, two-tailed
**$p \leq .01$, two-tailed
***$p \leq .001$, two-tailed

Table 4. Inter-correlation (Pearson r) among temperament dimensions at 1 month

Dimension	1	2	3	4	5	6	7	8	9	10
1. Soothability										
2. Cuddliness	.13									
3. Positive Mood	.24**	.24**								
4. Rhythmicity	.41***	.25**	.35***							
5. Threshold	-.09	-.12	-.10	-.13						
6. Activity Level	-.02	-.06	.004	.11	.04					
7. Adaptability	.42***	.15	.29***	.45***	-.18*	-.09				
8. Approach	.26**	.08	-.04	.32***	-.10	-.08	.58***			
9. Intensity	-.13	-.09	.06	-.05	.05	.09	.01	-.08		
10. Distractibility	.23**	.05	-.09	.07	.13	.03	.03	.09	-.07	
11. Persistence	.18*	.07	.23*	.15	-.08	-.04	.17	.16	-.12	-.01

*$p \leq .05$, two-tailed
**$p \leq .01$, two-tailed
***$p \leq .001$, two-tailed

Table 5. Inter-correlation (Pearson r) among temperament dimensions at 3 months

Dimension	1	2	3	4	5	6	7	8	9	10
1. Soothability										
2. Cuddliness	.11									
3. Positive Mood	.29**	.37***								
4. Rhythmicity	.35***	.25**	.21*							
5. Threshold	-.002	.16*	-.06	-.09						
6. Activity Level	-.04	-.02	-.006	-.03	.07					
7. Adaptability	.35***	.13	-.01	.27**	-.25**	-.03				
8. Approach	.31**	.24*	.12	.32**	-.16*	.10	.57***			
9. Intensity	.09	.26**	.07	.19*	.08	.22*	.01	.10		
10. Distractibility	.26**	.06	.01	.08	.12	-.07	.18*	.02	.05	
11. Persistence	.34***	.13	.36***	.20*	-.03	.09	.24*	.25*	.18*	-.05

*$p \leq .05$, two-tailed
**$p \leq .01$, two-tailed
***$p \leq .001$, two-tailed

Table 6. Intra-correlation (Pearson r) within temperament dimension across 3 assessments

Dimension	Age of Infant		
	1 Week/ 1 Month	1 Week/ 3 Months	1 Month/ 3 Months
1. Soothability	.38***	.26**	.22*
2. Cuddliness	.21*	.36***	.38***
3. Positive Mood	.65***	.78***	.67***
4. Rhythmicity	.45***	.32***	.46***
5. Threshold	.33***	.18*	.42***
6. Activity Level	.50***	.41***	.50***
7. Adaptability	.39**	.29*	.32**
8. Approach	.22*	.15	.31***
9. Intensity	.40***	.22*	.24*
10. Distractibility	.42***	.28**	.20*
11. Persistence	.57***	.48***	.52***

*p < .05, two-tailed
**p < .01, two-tailed
***p < .001, two-tailed